

Combining Technology with Cognitive Rehabilitation: Two Case Studies

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❖ Background

- ❖ Cognitive rehabilitation (CR) is an individualized intervention which helps people living with dementia accomplish personally meaningful goals (Kudlicka et al., 2023)
 - ❖ Often thought of as an adaptable set of core principles (Clare, 2008)
- ❖ CR has been shown to benefit from care partner involvement (Kudlicka et al., 2023)
 - ❖ Can also increase care partner quality of life (Burton & O'Connell, 2018)
- ❖ Technology has emerged as another avenue for supporting people with dementia that can be combined with psychological interventions (Burton & O'Connell, 2018; de Oliveria Assis et al., 2010)
- ❖ Here, we integrated CR with off-the-shelf technology to try and improve daily quality of life
 - ❖ Goal: would it work, and would it be worthwhile

References

- Burton, R. L., & O'Connell, M. E. (2018). Telehealth rehabilitation for cognitive impairment: Randomized controlled feasibility trial. *JMIR research protocols*, 7(2), e9420. <https://doi.org/10.2196/resprot.9420>
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Method

- ❖ Participants
 - ❖ 73-year-old male living with dementia due to Alzheimer's disease
 - ❖ Learn to use Audiobooks with Alexa/iPhone
 - ❖ Neuropsychological assessment was completed to choose the best strategies for learning
 - ❖ His 75-year-old wife, who was his primary care partner.
 - ❖ Learn Alexa's "drop in" feature
- ❖ Both participated in the other persons CR
- ❖ Technology (i.e., iPhone/Alexa) matched for goals and existing knowledge
- ❖ Bi-phasic design (i.e., Baseline/Intervention)

Measures	
Pre/post	Weekly
<ul style="list-style-type: none">- Interview (pre and post)- Neuropsychology testing- Hospital Anxiety and Depression Scale- Neuropsychiatric Inventory Questionnaire- Zarit Burden Interview	<ul style="list-style-type: none">- Canadian Occupational Performance Measure (COPM)<ul style="list-style-type: none">- Performance- Satisfaction- Research journal

- ❖ Analyses
 - ❖ Pre/post → Statistical comparison
 - ❖ COPM → Visual inspection of graphed data
 - ❖ Research journal → Thematic analysis

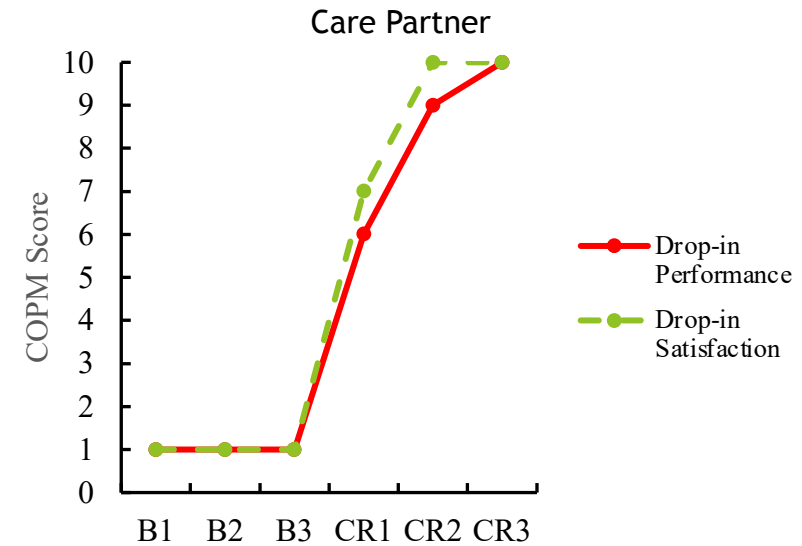
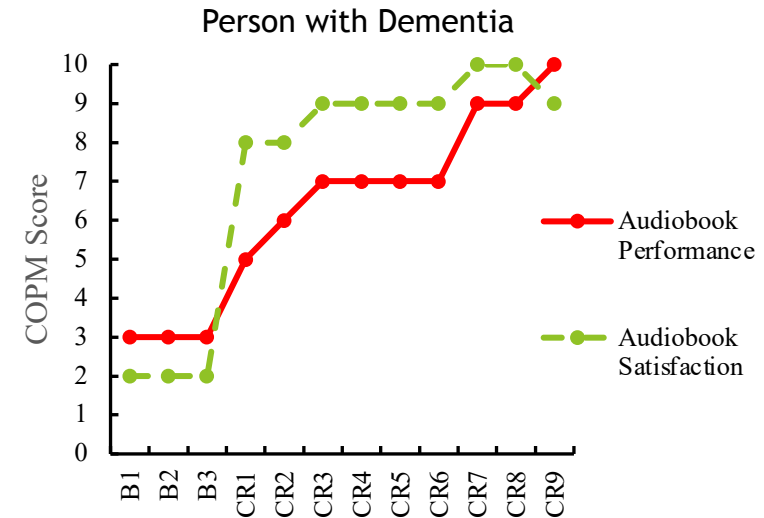
Results

❖ Quantitative findings (both cases):

- ❖ Significant change in goal progress (COPM)
- ❖ Few changes in pre/post measures

❖ Research journal findings:

- ❖ Importance of therapeutic alliance
- ❖ Visual component helped
- ❖ Incorporating technology was felt to be practical and useful
 - ❖ Fit into their daily lives



Discussion

- ❖ Results cautiously suggest the integration was successful, with several technologies and features being employed to facilitate goal progress in several areas of functioning
- ❖ Goal performance and satisfaction improved significantly across both cases, suggesting technology can be added to CR while maintaining its core principles (Burton & O'Connell, 2018)
- ❖ Lack of change in pre/post measures could suggest further benefits
 - ❖ Perhaps a slowing of decline (Nelson & Tabet, 2015), or stabilization of care partner wellbeing
- ❖ Limitation: self-selection bias (Larzelere et al., 2004).
 - ❖ Participants were highly motivated and engaged, may not be representative

References

Burton, R. L., & O'Connell, M. E. (2018). Telehealth rehabilitation for cognitive impairment: Randomized controlled feasibility trial. *JMIR research protocols*, 7(2), e9420. <https://doi.org/10.2196/resprot.9420>

Larzelere, R. E., Kuhn, B. R., & Johnson, B. (2004). The intervention selection bias: an underrecognized confound in intervention research. *Psychological bulletin*, 130(2), 289.

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